

What is claimed is:

1. A method of treating a heart, comprising:

measuring an internal pressure of a coronary vein so as to determine a measured internal pressure;

flowing blood through a passageway between a blood-containing anatomical structure and the coronary vein so as to allow retrograde blood flow in the coronary vein; and

based on the measured internal pressure, at least partially obstructing the coronary vein at a location upstream of the passageway relative to a direction of the retrograde blood flow.
2. The method of claim 1, further comprising selecting an amount of obstruction based on the measured internal pressure.
3. The method of claim 1, wherein the measuring of the internal pressure of the coronary vein is performed before the flowing of the blood through the passageway.
4. The method of claim 1, further comprising selecting the location upstream of the passageway based on the measured internal pressure.
5. The method of claim 1, wherein the at least partially obstructing the coronary vein includes allowing at least some antegrade blood flow past the location during at least a portion of a cardiac cycle.

6. The method of claim 1, wherein the at least partially obstructing the coronary vein includes allowing at least some antegrade blood flow past the location throughout a cardiac cycle.
7. The method of claim 1, wherein the at least partially obstructing the coronary vein includes allowing at least some antegrade blood flow past the location during diastole and preventing antegrade blood flow past the location during systole.
8. The method of claim 1, wherein the at least partially obstructing the coronary vein includes completing obstructing the coronary vein to prevent antegrade blood flow past the location throughout a cardiac cycle.
9. The method of claim 1, further comprising placing an implant at the location, wherein the implant is configured to at least partially obstruct the coronary vein.
10. The method of claim 9, further comprising selecting the implant from a plurality of implants based on the measured internal pressure.
11. The method of claim 9, wherein the implant is configured to completely obstruct the coronary vein during at least a portion of a cardiac cycle.

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12. The method of claim 11, wherein the implant is configured to allow at least some antegrade blood flow toward the location during at least a portion of a cardiac cycle.
13. The method of claim 11, wherein the implant is configured to at least partially absorb pressure in the coronary vein.
14. The method of claim 9, wherein the implant is configured to allow at least some antegrade blood flow past the location during a portion of a cardiac cycle.
15. The method of claim 14, wherein the implant is configured to allow at least some antegrade blood flow past the location during diastole and prevent antegrade blood flow past the location during systole.
16. The method of claim 9, wherein the implant is configured to completely obstruct the coronary vein throughout a cardiac cycle.
17. The method of claim 9, wherein the implant defines a lumen configured to allow at least some antegrade blood flow therethrough.
18. The method of claim 9, wherein the implant is configured to allow at least some antegrade blood flow through a space formed between an external surface of the implant and an inner surface of the coronary vein.

19. The method of claim 9, wherein the placing of the implant includes placing the implant within the lumen of the coronary vessel.
20. The method of claim 19, further comprising expanding the implant.
21. The method of claim 20, wherein the expanding of the implant includes expanding the implant via a balloon.
22. The method of claim 9, wherein at least part of the implant is configured to deform.
23. The method of claim 22, wherein the implant comprises an end face configured to deform.
24. The method of claim 1, further comprising at least partially collapsing the coronary vein at the location.
25. The method of claim 24, wherein the at least partially collapsing includes completely collapsing the coronary vein during at least a portion of a cardiac cycle.
26. The method of claim 24, wherein the at least partially collapsing includes completely collapsing the coronary vein during systole.

27. The method of claim 24, wherein the at least partially collapsing includes completely collapsing the coronary vein throughout a cardiac cycle.
28. The method of claim 24, wherein the at least partially collapsing includes partially collapsing the coronary vein throughout a cardiac cycle.
29. The method of claim 1, further comprising placing magnetic elements at the location so as to partially collapse the coronary vein at the location.
30. The method of claim 1, wherein the blood-containing anatomical structure is a heart chamber.
31. The method of claim 30, wherein the heart chamber is a left ventricle.
32. The method of claim 1, wherein the blood-containing anatomical structure is a coronary artery.
33. The method of claim 1, further comprising placing a conduit in the passageway.
34. The method of claim 1, further comprising forming the passageway.
35. The method of claim 1, wherein measuring the internal pressure includes measuring the mean wedge pressure.

36. A method of retroperfusion, comprising:

measuring an internal pressure of a portion of the venous system to determine a measured internal pressure;

flowing blood through a passageway between a blood-containing anatomical structure and the portion of the venous system so as to allow retrograde blood flow in the portion of the venous system; and

based on the measured internal pressure, at least partially obstructing the portion of the venous system at a location upstream of the passageway relative to a direction of the retrograde blood flow.

37. The method of claim 36, wherein measuring the internal pressure includes measuring the mean wedge pressure.

38. A method of treating a heart, comprising:

flowing blood through a passageway between a heart chamber and a coronary vein so as to cause retrograde blood flow in the coronary vein; and

at least partially obstructing the coronary vein at a location upstream of the passageway relative to a direction of the retrograde blood flow.

39. The method of claim 38, wherein the at least partially obstructing the coronary vein includes allowing at least some antegrade blood flow past the location during at least a portion of a cardiac cycle.

40. The method of claim 38, wherein the at least partially obstructing the coronary vein includes allowing at least some antegrade blood flow past the location throughout the cardiac cycle.

41. The method of claim 38, wherein the at least partially obstructing the coronary vein includes allowing at least some antegrade blood flow past the location during diastole and preventing antegrade blood flow past the location during systole.

42. The method of claim 38, wherein the at least partially obstructing the coronary vein includes completely obstructing the coronary vein so as to prevent antegrade blood flow past the location throughout a cardiac cycle.

43. The method of claim 38, further comprising measuring a mean wedge pressure of the coronary vein to determine a measured mean wedge pressure and at least partially obstructing the coronary vein based on the measured mean wedge pressure.

44. The method of claim 38, further comprising measuring a mean wedge pressure of the coronary vein to determine a measured mean wedge pressure and selecting the location upstream of the passageway based on the measured mean wedge pressure.

45. A system for use in treating a heart by causing retrograde blood flow in a coronary vein, the system comprising:

a pressure measuring device configured to measure an internal pressure of a coronary vein; and

at least one implant configured to be placed relative to the coronary vein at a location upstream, relative to a direction of the retrograde blood flow, of a passageway formed between the coronary vein and a blood-containing anatomical structure,

wherein the implant is configured to at least partially obstruct the coronary vein.

46. The system of claim 45, wherein the at least one implant is configured to allow at least some antegrade blood flow in the coronary vein past the location during at least a portion of a cardiac cycle.

47. The system of claim 46, wherein the at least one implant is configured to allow at least some antegrade blood flow past the location throughout the cardiac cycle.

48. The system of claim 46, wherein the at least one implant is configured to allow at least some antegrade blood flow past the location during diastole and prevent antegrade blood flow past the location during systole.

49. The system of claim 45, wherein the at least one implant is configured to prevent antegrade blood flow past the location throughout a cardiac cycle.

50. The system of claim 45, wherein the at least one implant is configured to prevent antegrade blood flow past the location during at least part of a cardiac cycle.

51. The system of claim 45, wherein the at least one implant is configured to be placed within a lumen of the coronary vein at the location.

52. The system of claim 45, wherein the at least one implant defines a passage configured to allow at least some antegrade blood flow therethrough during at least a portion of a cardiac cycle.

53. The system of claim 52, wherein the passage has a substantially uniform cross-section.

54. The system of claim 52, wherein the passage has a non-uniform cross-section.

55. The system of claim 54, wherein the cross-section is smaller in a middle portion of the passage than in an end portion of the passage.

56. The system of claim 55, wherein the end portion is an end that faces the passageway.

57. The system of claim 54, wherein the passage is at least partially tapered.

58. The system of claim 52, wherein the passage is configured to close during at least a portion of the cardiac cycle.

59. The system of claim 58, wherein the passage is configured to close throughout the cardiac cycle.

60. The system of claim 52, wherein the passage is configured to at least one of expand and contract during the cardiac cycle.

61. The system of claim 52, further comprising a biasing member around an external surface of the at least one implant.

62. The system of claim 61, wherein the biasing member is configured to reduce a cross-section of the passage.

63. The system of claim 61, wherein the biasing member is configured to at least partially collapse a portion of the at least one implant.

64. The system of claim 51, wherein the at least one implant includes a filter.

65. The system of claim 51, wherein the at least one implant includes an external surface, at least a portion of the external surface being configured to engage an inner surface of the coronary vein.

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66. The system of claim 65, wherein a space is formed between at least an additional portion of the external surface of the at least one implant and the inner surface of the coronary vein, the space being configured to allow at least some of the antegrade blood flow therethrough.
67. The system of claim 51, wherein the at least one implant is expandable.
68. The system of claim 67, wherein the at least one implant is self-expandable.
69. The system of claim 67, wherein the at least one implant is expandable via a dilation mechanism.
70. The system of claim 69, wherein the dilation mechanism is a balloon.
71. The system of claim 45, wherein the at least one implant includes a flexible portion configured to deform during at least a portion of a cardiac cycle.
72. The system of claim 71, wherein the flexible portion is an end face of the at least one implant.
73. The system of claim 72, wherein the end face faces toward the passageway.

74. The system of claim 73, wherein the end face is configured to prevent antegrade blood flow past the location.
75. The system of claim 71, wherein the flexible portion is configured to deform to absorb pressure in the coronary vessel.
76. The system of claim 45, further comprising an attachment mechanism associated with the at least one implant.
77. The system of claim 76, wherein the attachment mechanism is configured to secure the at least one implant within a lumen of the coronary vein.
78. The system of claim 52, further comprising at least one mechanism configured to act on an external portion of the at least one implant so as to at least partially collapse the at least one implant proximate the at least one mechanism.
79. The system of claim 78, wherein the at least one mechanism includes an inflatable member.
80. The system of claim 79, wherein the at least one mechanism includes an air bubble.

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81. The system of claim 78, wherein the at least one mechanism includes a biasing member.

82. The system of claim 78, wherein the at least one mechanism is configured to collapse the at least one implant such that the passage closes during a portion of the cardiac cycle.

83. The system of claim 45, wherein the at least one implant includes magnetic elements configured to at least partially collapse the coronary vessel at the location during at least a portion of the cardiac cycle.

84. The system of claim 83, wherein the magnetic elements are configured to be implanted in a heart wall surrounding the coronary vessel.

85. The system of claim 83, wherein the magnetic elements are configured to completely collapse the coronary vessel at the location during at least part of a cardiac cycle.

86. The system of claim 85, wherein the magnetic elements are configured to completely collapse the coronary vessel at the location during systole.

87. The system of claim 83, wherein the magnetic elements are configured to at least partially collapse the coronary vessel throughout the cardiac cycle.

88. The system of claim 45, wherein the passageway is configured to flow blood between the blood-containing anatomical structure and the coronary vein so as to cause the retrograde blood flow in the coronary vein.

89. The system of claim 45, wherein the blood-containing anatomical structure is a heart chamber.

90. The system of claim 45, wherein the heart chamber is a left ventricle.

91. The system of claim 45, wherein the blood-containing anatomical structure is a coronary artery.

92. The system of claim 45, wherein the at least one implant includes a plurality of implants having differing characteristics.

93. The system of claim 54, wherein the implant comprises a stent having differing stent structures such that a first portion of the stent defines a lumen that is smaller than a second portion of the stent.

94. The system of claim 93, wherein the stent is expandable and the first portion of the stent is configured to expand less than the second portion of the stent.

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95. A device for use in treating a heart by causing retrograde blood flow in a coronary vein, the device comprising:

an implant configured to be placed within the coronary vein at a location upstream, relative to a direction of the retrograde blood flow, of a passageway between the coronary vein and a heart chamber,

wherein the implant is configured to at least partially obstruct the coronary vein.

96. The device of claim 95, wherein the implant is configured to control an internal pressure of the coronary vein.

97. The device of claim 95, wherein the implant is configured to partially obstruct the coronary vein at the location.

98. The device of claim 95, wherein the implant is configured to completely obstruct the coronary vein at the location.

99. The device of claim 95, wherein the implant is configured to permit at least some antegrade blood flow in the coronary vein past the location.

100. The device of claim 99, wherein the implant is configured to prevent antegrade blood flow past the location during systole and allow antegrade blood flow past the location during diastole.

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101. The device of claim 99, wherein the implant is configured to permit at least some antegrade blood flow past the location throughout a cardiac cycle.

102. The device of claim 95, wherein the implant is configured to prevent antegrade blood flow past the location throughout a cardiac cycle.

103. The device of claim 96, wherein the implant is configured to relieve excess internal pressure in the coronary vein.

104. The device of claim 96, wherein the implant is configured to maintain the internal pressure approximately within a predetermined range.

105. The device of claim 45, wherein the implant is configured to relieve excess pressure in the coronary vein.

106. The device of claim 45, wherein the implant is configured to maintain the internal pressure approximately within a predetermined pressure range.

107. The method of claim 1, wherein the at least partially obstructing the coronary vein includes maintaining the internal pressure approximately within a predetermined pressure range.

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108. The method of claim 38, wherein at least partially obstructing the coronary vein includes at least partially obstructing the coronary vein so as to control an internal pressure of the coronary vein.

109. A system for use in retroperfusion, the system comprising:

a pressure measuring device configured to measure an internal pressure of a portion of the venous system; and

at least one implant configured to be placed relative to the portion of the venous system at a location upstream, relative to a direction of the retrograde blood flow, of a passageway formed between the portion of the venous system and a blood-containing anatomical structure,

wherein the implant is configured to at least partially obstruct the portion of the venous system.

110. The system of claim 109, wherein the internal pressure is mean wedge pressure.

111. A stent comprising:

at least a first cell structure and at least a second cell structure that differs from the first cell structure,

wherein the stent is expandable and the first cell structure is configured so as to expand less than the second cell structure upon expansion of the stent.

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112. The stent of claim 111, wherein the first cell structure comprises a series of repeating wave-like segments traversing a circumference of the stent and a plurality of struts connecting the segments so as to at least substantially hinder radial expansion of the first cell structure.

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